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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,171	02/07/2002	Masaaki Hiroki	SEL 302	1313

7590

10/19/2005

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EXAMINER

NGUYEN, KEVIN M

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,171

Applicant(s)

HIROKI, MASA AKI

Examiner

Kevin M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/18/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is made in response to applicant's amendment filed on 05/24/2005. Claims 1-3, 10 and 11 are amended, claim 12 is cancelled. Thus, claims 1-11 and 13-18 are currently pending in the application. An action follows below:

It is noted that applicant's amendment with respect to the claims 1-3, 10 and 11 necessitated the new grounds of rejection presented in this Office action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirai et al (previously cited, US 5,953,002) hereinafter Hirai.

4. As to claim 1, Hirai teaches a liquid crystal display (LCD) device associated with a method comprising the steps of:

dividing one frame into a first subframe and a second subframe (the first and second frames are respectively formed of two subframes, col. 10, lines 30-31);

supplying a first voltage of picture signals from a source driver to a pixel by scanning signals of a gate driver in the first subframe (In Fig. 1 there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9, lines 18-21; the subframe using ± 1 and $\pm X_0$ is referred to as and X subframe, col. 8, lines 65-66);

supplying a second voltage of picture signals from a source driver to a pixel by scanning signals of a gate driver in the second subframe (In Fig. 1 there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9, lines 18-21; the subframe using ± 1 and $\pm Y_0$ is referred to as a Y subframe, col. 9, line 1);

displaying images by displaying the first subframe and the second subframe (a display can be completed by displaying the divided display data with two subframes, see col. 8, lines 35-36).

5. As to claim 2, Hirai teaches a liquid crystal display (LCD) device associated with a method comprising the steps of:

dividing one frame into a first subframe and a second subframe (the first and second frames are respectively formed of two subframes, col. 10, lines 30-31);

supplying a first voltage of picture signals from a source driver to a pixel by scanning signals of a gate driver in the first subframe (In Fig. 1 there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9, lines 18-21; the subframe using ± 1 and $\pm X_0$ is referred to as and X subframe, col. 8, lines 65-66);

supplying a second voltage of picture signals from a source driver to a pixel by scanning signals of a gate driver in the second subframe (In Fig. 1 there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9,

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lines 18-21; the subframe using ± 1 and $\pm Y_0$ is referred to as a Y subframe, col. 9, line 1);

displaying images by displaying the first subframe and the second subframe (a display can be completed by displaying the divided display data with two subframes, see col. 8, lines 35-36);

wherein the first subframe and the second subframe are adjacent to each other (a group of ± 1 and ± 0.2 and each of the groups is put in each of the subframes X, Y, col. 12, lines 50-52);

wherein the first voltage and the second voltage supplied in the first and second subframe periods are different from each other throughout display the images (display gradation by changing the amplitude of voltage applied to pixels, wherein series of voltage pulses, as signal voltages, wherein a series of different voltage levels are applied in order to display a specified gradation, see abstract).

6. As to claim 3, Hirai teaches a liquid crystal display (LCD) device associated with a method comprising the steps of:

dividing one frame into a first subframe and a second subframe (the first and second frames are respectively formed of two subframes, col. 10, lines 30-31);

supplying voltages of pixel signals from a source driver to a pixel by scanning signals of a gate driver (column drivers 5 in which the signals are transformed into column voltages to be applied to a liquid crystal panel 7, col. 19, lines 33-35; row drivers 6 in which data are transformed into row voltages to be applied to the liquid crystal display panel 7, col. 19, lines 38-40);

changing the voltage of the pictures signals supplied in the plural subframe periods so that the supplied voltages in adjacent subframe periods are different from each other throughout displaying images (display gradation by changing the amplitude of voltage applied to pixels, wherein series of voltage pulses, as signal voltages, wherein a series of different voltage levels are applied in order to display a specified gradation, see abstract);

displaying one frame by displaying the adjacent subframes successively on the basis of time (a display can be completed by displaying the divided display data with two subframes, see col. 8, lines 35-36, in response to a timing of the application of selection pulse, col. 20, lines 46-47).

7. As to claim 10, Hirai teaches a liquid crystal display (LCD) device comprising:
plural pixels (pixels, col. 20, line 51);

a gate driving circuit (row drivers 6 in which data are transformed into row voltages to be applied to the liquid crystal display panel 7, col. 19, lines 38-40);

a source driving circuit for supplying picture signals to the pixels by scanning signals of the gate driving circuit (column drivers 5 in which the signals are transformed into column voltages to be applied to a liquid crystal panel 7, col. 19, lines 33-35; row drivers 6 in which data are transformed into row voltages to be applied to the liquid crystal display panel 7, col. 19, lines 38-40);

a liquid crystal whose transmittivity is changed dependently on the voltage of the pictures signals supplied to the pixels (In Fig. 1 there are shown voltage values applied

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to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9, lines 18-21);

means for dividing one frame into a first subframe and a second subframe (the first and second frames are respectively formed of two subframes, col. 10, lines 30-31);

means for changing the voltage of the picture signals supplied in the plural subframe periods so that the supplied voltages in adjacent subframe periods are different from each other throughout displaying images (display gradation by changing the amplitude of voltage applied to pixels, wherein series of voltage pulses, as signal voltages, wherein a series of different voltage levels are applied in order to display a specified gradation, see abstract).

8. As to claim 11, Hirai teaches a liquid crystal display (LCD) device comprising:

plural pixels (pixels, col. 20, line 51);

a gate driving circuit (row drivers 6 in which data are transformed into row voltages to be applied to the liquid crystal display panel 7, col. 19, lines 38-40);

a source driving circuit for supplying picture signals to the pixels by scanning signals of the gate driving circuit (column drivers 5 in which the signals are transformed into column voltages to be applied to a liquid crystal panel 7, col. 19, lines 33-35; row drivers 6 in which data are transformed into row voltages to be applied to the liquid crystal display panel 7, col. 19, lines 38-40);

a liquid crystal whose transmittivity is changed dependently on the voltage of the pictures signals supplied to the pixels (In Fig. 1 there are shown voltage values applied

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to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d1=0.6$ and $d2=0.8$ in table 1, see col. 9, lines 18-21);

means for dividing one frame into a first subframe and a second subframe (the first and second frames are respectively formed of two subframes, col. 10, lines 30-31);

means for changing the voltage of the picture signals supplied in the plural subframe periods so that the supplied voltages in adjacent subframe periods are different from each other throughout displaying images (display gradation by changing the amplitude of voltage applied to pixels, wherein series of voltage pulses, as signal voltages, wherein a series of different voltage levels are applied in order to display a specified gradation, see abstract, in response to a timing of the application of selection pulse, col. 20, lines 46-47).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4-9 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai et al in view of Katakura et al (previously cited, US 6,057,824) hereinafter Katakura.

As to claims 4-8 and 13-17, Hirai teaches all of the claimed limitations of claims 1-3, 10 and 11, except for the frames are $1/60$, $1/120$, $1/24$, $1/48$, $1/96$ second.

However, Katakura teaches a related LCD device which includes the frame frequency 20-40Hz and the frame scanning frequency 60-120 Hz (col. 17, lines 44-47).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Hirai's frames to make the frame frequency 20-40Hz and the frame scanning frequency 60-120 Hz as taught by Katakura in order to achieve the benefit of provide display apparatus capable of a good halftone display while suppressing the flicker (see Katakura, col. 2, lines 3-5).

As to claims 9 and 18, Katakura reviews in the related art that his invention relates to a display apparatus for use in a monitor, a video camera, a projector, a television, and a car navigation system (col. 1, lines 10-13).

Response to Arguments

11. Applicant's arguments filed 07/18/2005 have been fully considered but they are not persuasive. Applicant argues features in the independent claims 1-3, 10 and 11 that are newly recited. Thus, new grounds of rejection have been used. See above rejections. For these reasons, the rejections based on Hirai and Katakura have been maintained.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Nguyen whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see <http://portal.uspto.gov/external/portal/pair>. Should you have questions on access to the

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Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197
(toll-free).

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Art Unit 2674

KMN
October 12, 2005



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SUPERVISORY PATENT EXAMINER